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TAILORING THE ESSENTIAL FACILITIES DOCTRINE TO THE IT SECTOR:
COMPULSORY LICENSING OF INTELLECTUAL PROPERTY RIGHTS AFTER
MICROSOFT

INGE GRAEF*

Under the essential facilities doctrine, intellectual property right holders are forced to license their exclusive right to competitors when certain conditions established by the European Court of Justice are met. In the *Microsoft* case, the Court of First Instance applied the doctrine, but it lowered the standards for the imposition of a compulsory license considerably. In this article, it will be argued that the Court did this because of the exceptional market situation in the case. Looking at the economics of IT and the innovation process in this industry, it will be shown that compulsory licenses should be imposed on the basis of more lenient conditions in order to protect innovation and competition in the IT market. The market situation grown around the intellectual property right could indicate how strictly the conditions of the essential facilities should be applied in future intellectual property licensing cases. The stricter conditions established in earlier judgments like *Magill and IMS Health* may therefore still be valid in cases where no substantial entry barriers to the market are present.

I. INTRODUCTION

In 2004 the European Commission imposed a €497 million fine, at that moment the largest in European competition law history, on Microsoft for abusing its dominant position in the market of operating systems for personal computers. Holding a market share well above 90%, Microsoft refused to supply interoperability information protected by intellectual property rights to its competitors. In its decision, the Commission relied on earlier cases decided by the European Court of Justice (ECJ) involving compulsory licensing of intellectual property rights.

Intellectual property law grants protection in the form of exclusive rights. However, these rights are not immune from competition law intervention. While an exclusive right may be important for rewarding inventors for their investments and for encouraging innovation in general, it can also lead to a dominant position under competition law. Under Article 102 of the Treaty on the Functioning of the European Union (TFEU), the abuse of a dominant position is prohibited. With regard to intellectual property rights, the abuse may consist of a refusal to grant a license to competitors. If the right holder is not willing to license, competitors may not be able to compete when the standardised technology in the market is protected by intellectual property law. The right holder is then able to foreclose competition in the market. To remedy such a refusal to license, a compulsory license can be imposed on the basis of the essential facilities doctrine. Under this doctrine, the owner of a facility which is essential for further innovation, and without which competition is impeded, has to give competitors access to this facility. The right holder is thus forced to license his exclusive right to competitors.

In several cases the ECJ has applied the essential facilities doctrine to intellectual property licensing. In this article, these cases will be compared with the judgment of the Court of First Instance (CFI) in the *Microsoft* case. It will be shown that the Court has considerably lowered the standards for the imposition of a compulsory license under the essential facilities doctrine in the *Microsoft* judgment. The article therefore deals with the question of which criteria should be

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applied in future intellectual property licensing cases. It will be argued that the CFI has tailored the essential facilities doctrine to the specifics of the information technology (IT) sector and has therefore used more lenient conditions to impose a compulsory license in the *Microsoft* case.

After having discussed the intellectual property licensing cases and the *Microsoft* case, attention will be paid to the economics of IT and to the innovation process in this industry to demonstrate that the IT sector is different from other sectors of the economy and therefore deserves a special approach. The existence of network effects, switching costs and economies of scale give rise to very high entry barriers as a result of which effective competition is hard to achieve. It will be argued that compulsory licenses could help to restore competition in the IT market and should therefore be imposed on the basis of more lenient conditions. Since the IT sector is dynamic, this will not necessarily have a negative effect on innovation. It will be shown that more openness may even spur innovation, since it enables market participants to build upon each other's inventions. However, for other sectors of the economy where innovation is not complementary, this may be different. Furthermore, when no entry barriers exist, competition can still be achieved through the normal process and intervention by a Court is less desirable in these circumstances. For these reasons, it will be argued that the '*Microsoft* conditions' should not replace the stricter conditions used in earlier cases like *Magill* and *IMS Health*, but should be seen as a set of more lenient conditions to be applied in cases where substantial entry barriers to the market are present, such as in the IT sector. For other sectors which are not characterised by IT features, the stricter conditions established in *Magill* and *IMS Health* may still be valid. Therefore, it will be concluded that in future cases the market situation grown around the intellectual property right could indicate how strictly the conditions of the essential facilities should be applied.

II. THE ESSENTIAL FACILITIES DOCTRINE AND INTELLECTUAL PROPERTY RIGHTS

A. *The First Cases*

In *Volvo v. Veng*¹ and *Renault v. Maxicar*², the ECJ recognised for the first time that a refusal to license an intellectual property right may qualify as abuse under Article 102 TFEU. Both cases involved independent repairers who were refused a license to use the protected design of the car manufacturers to make spare parts. The ECJ held that a refusal to grant a license could not in itself constitute an abuse, since the right of the owner of a protected design to prevent third parties from using its design forms the very subject-matter of the exclusive right. However, an obligation to license could arise when the conduct involved "certain abusive conduct such as the arbitrary refusal to supply spare parts to independent repairers, the fixing of prices for spare parts at an unfair level or a decision no longer to produce spare parts for a particular model even though many cars of that model are still in circulation".³ If the conduct qualified as abuse, the remedy for that abuse could be to prevent the dominant firm from enforcing its intellectual property right, a form of compulsory license.⁴

In *Magill*⁵, this line of reasoning was taken a step further. The case involved three broadcasting

1 Case 238/87 *Volvo v. Eric Veng* [1988] ECR 6211.

2 Case 53/87 *Renault v. Maxicar* [1988] ECR 6039.

3 Case 238/87 *Volvo v. Eric Veng* [1988] ECR 6211, at para. 9 and Case 53/87 *Renault v. Maxicar* [1988] ECR 6039, at para. 3.

4 S.D. Anderman & J. Kallaugher, *Technology Transfer and the new EU Competition Rules: Intellectual Property Licensing after Modernisation* (Oxford 2006), p. 282.

5 Joined cases C-241/91 and C-242/91 *Telefis Eireann and Independent Television Publications Ltd v. Commission of the European Communities (Magill)* [1995] ECR I-743.

companies which refused to supply the publishing company Magill with weekly listings of their TV programmes. Each station published its own weekly TV guide and granted a license to daily papers to publish its programme listings one day in advance. However, a weekly TV guide including the programme listings of all three stations was not available. The broadcasting companies based the refusal on the copyright protection of their programme listings. In its judgment, the ECJ relied on *Volvo* and argued that in exceptional circumstances the exercise of an exclusive right may amount to an abuse.⁶ The Court listed three main factors which led to the conclusion that the behaviour of the broadcasting companies was abusive. First, since the broadcasting companies were the only sources of the information, they prevented the appearance of a new product for which there was potential consumer demand and for which there was no actual or potential substitute. Second, there was no justification for the refusal to license on the basis of either the activity of television broadcasting or that of publishing television magazines. Thirdly, the broadcasting companies reserved to themselves the secondary market of weekly television guides by excluding all competition on that market, since they denied access to the information which was indispensable for the compilation of such a magazine.⁷

The crucial point in *Magill* is that the monopoly was over basic information not available from another source and required by a third party.⁸ While the copyright granted to Magill was questionable, since a schedule indicating the order in which TV programmes will be shown does not have a real artistic value, the Court expressly confirmed that the protection of copyright is a matter for national rules, so a refusal to grant a license cannot in itself constitute abuse even if the owner holds a dominant position. The refusal to license is only abusive where “exceptional circumstances” exist.⁹ The Court established the following conditions necessary to identify these circumstances: the product to which the refusal to supply relates is an indispensable input required for a new product which the holder of the intellectual property right does not offer and for which there is potential demand; there is no justification for the refusal to supply and the dominant undertaking reserves for itself a secondary market.¹⁰

B. Step Back

Although the *Bronner* case is not concerned with intellectual property rights itself, the reasoning of the Court is important for intellectual property licensing cases. The *Bronner* case deals with the access to a newspaper home-delivery scheme in Austria. Both Mediaprint and Oscar Bronner were newspaper publishers, but only Mediaprint had a nationwide home-delivery scheme for newspapers. Bronner claimed access to the scheme, but this was rejected by Mediaprint. The ECJ held that there was no abuse in this case. The Court argued that there were other methods of distributing newspapers available and that there was no evidence that it would not be economically viable to set up a second home-delivery system with a circulation comparable to that of the newspapers distributed by the existing scheme. Therefore, access to the scheme of Mediaprint was not indispensable and thus the exceptional circumstances required by *Magill* were not present.¹¹ Since

⁶ *Ibid.*, at para. 50.

⁷ S.D. Anderman, *EC Competition Law and Intellectual Property Rights: The Regulation of Innovation* (Oxford 1998), at p. 209.

⁸ R. Greaves, “Magill Est Arrivé ... RTE and ITP v Commission of the European Communities” (1995) *European Competition Law Review* 244, at p. 246.

⁹ See note 5 above, at paras. 49-50.

¹⁰ J.S. Venit, “Article 82 EC: Exceptional Circumstances. The IP/Antitrust Interface After *IMS Health*” in C.D. Ehlermann & I. Atanasiu (eds.), *European Competition Law Annual 2005: The Interaction between Competition Law and Intellectual Property Law* (Portland, Oregon 2007), at p. 620.

¹¹ Case C-7/97 *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs* [1998] ECR I-7791, at paras. 43-46.

it was for Bronner to prove the economic unviability, the essential facilities doctrine seems to be applied more restrictively here than in earlier cases. It was even argued that if the new indispensability criterion were generally used, the applicability of the doctrine would be restricted to natural monopolies exclusively, since these are the only markets in which two or more firms can never be economically viable unless the essential facilities doctrine is applied.¹²

C. The Four Conditions

In *IMS Health*¹³, the ECJ clarified the rules developed in earlier cases and specified the condition that competition on a downstream market must be eliminated.¹⁴ *IMS Health*, a company that provided data on regional sales of pharmaceutical products to pharmaceutical companies, blocked use of its copyrighted system to NDC, which was a competitor of *IMS Health*. The refusal had the effect of preventing NDC from competing on the German market, since the system had become a de facto industry standard. The ECJ argued that it was clear from case law that for a refusal of a dominant undertaking “to give access to a product or service indispensable for carrying on a particular business to be treated as abusive, it is sufficient that three cumulative conditions be satisfied, namely, that that refusal is preventing the emergence of a new product for which there is a potential consumer demand, that it is unjustified and such as to exclude any competition on a secondary market”.¹⁵

With regard to the last condition, the Court held that it is essential to distinguish two markets: one upstream, formed by the product or service, and a secondary or downstream market, on which the product or service is used for the manufacture of another product or the supply of another service. According to the Court, it is sufficient that a potential or even hypothetical market can be identified. The condition of exclusion of competition on a secondary market is therefore fulfilled when two different stages of production can be identified that are interconnected.¹⁶ This interpretation expands the applicability of the condition beyond a market to any input which is indispensable for another stage of production.¹⁷

According to the judgment there are four conditions for a refusal to supply to be abusive: the input required is indispensable, the refusal to supply eliminates competition on a secondary market, the refusal prevents the emergence of a new product for which there is potential demand and there is no objective justification for the refusal.¹⁸

D. The Status of the Doctrine

The systematic approach applied in the refusal to license cases is derived from the more general category of refusal to supply. With regard to physical infrastructures, the Commission had already held that a refusal to supply could constitute an abuse in certain circumstances. In the *Sealink* deci-

12 M.A. Bergman, “The Bronner Case – A Turning Point for the Essential Facilities Doctrine?” (2000) 21 European Competition Law Review 59, at p. 61.

13 Case C-418/01 *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG* [2004] ECR I-0000.

14 U. Müller and A. Rodenhuis, “The Rise and Fall of the Essential Facility Doctrine” (2008) European Competition Law Review 310, at p. 325.

15 See note 13 above, at para. 38.

16 See note 13 above, at paras. 42-45.

17 D. Howarth & K. McMahon, “Windows has Performed an Illegal Operation’: the Court of First Instance’s Judgment in *Microsoft v Commission*” (2008) 29 European Competition Law Review 117, at p. 120.

18 F. Lévêque, “Innovation, Leveraging and Essential Facilities: Interoperability Licensing in the EU Microsoft Case” in F. Lévêque & H. Shelanski (eds.), *Antitrust, Patents and Copyright. EU and US Perspectives* (Cheltenham and Northampton 2005), at p. 104.

sions, the Commission argued that the owner of a port facility which also provides a ferry service, abuses its dominant position when it refuses to grant a competing ferry service access to the port without objective justification.¹⁹ The cases dealing with access to physical infrastructures are similar to the cases concerning access to intellectual property rights, since both types of cases relate to refusals by the owner of an ‘essential facility’ to grant third parties access to a market. For both the refusal to supply and the refusal to grant a license, a number of special conditions have to be met before it constitutes abuse of a dominant position.²⁰ The refusal to license cases can therefore be seen as a special category within the more general refusal to supply case law in which the essential facilities doctrine was established.

However, the essential facilities doctrine does not seem to be applied uniformly in the intellectual property licensing cases discussed above. While the later cases refer to the cases decided earlier, the rulings of previous cases have never been adopted completely. In each case a new aspect was added. Therefore, it could be argued that the conditions of the doctrine were applied differently in every case. Furthermore, after *IMS Health* there were still some issues unresolved with regard to the application of the essential facilities doctrine to intellectual property licensing. It was not clear what standards applied for the requirement of a new product and whether the four conditions were exhaustive or not. It was hoped that future cases would clarify the status of the doctrine.

III. THE *MICROSOFT* JUDGMENT

In September 2007, the CFI delivered its judgment in the *Microsoft* case. While the Court applied the four conditions of the essential facilities doctrine as established in *Magill* and *IMS Health*, the judgment did little to clarify the scope of the duty to license intellectual property rights. When comparing the *Microsoft* case with the previous intellectual property licensing cases, it becomes clear that the standards for the imposition of a compulsory license have been considerably lowered by the Court.

A. The Facts and the Commission Decision

In 1998, Sun Microsystems Inc., one of Microsoft’s most important competitors in the work group server market, complained to the Commission that Microsoft infringed Article 102 TFEU (at that time Article 82 EC) by keeping to itself information that certain software products for network computing, the so-called work group server operating systems, need to interoperate fully with Microsoft’s client PC operating systems.²¹ Microsoft’s refusal to disclose how the integration between the Windows operating system and its server operating system functioned, limited the ability of competitors to offer servers, other than Microsoft’s server, to run on its operating system. According to Sun, Microsoft was hereby leveraging its dominant position on the market for operating systems for personal computers to obtain a further monopoly in the market for work group server operating systems.

On 24 March 2004, the Commission delivered its decision in the case and imposed a fine on Microsoft of €497 million, which was at that time the highest fine imposed on a single firm in

19 Commission Decision *B & I Line v. Sealink Harbours* [1992] 5 CMLR 255, at para. 41; Commission Decision *Containers v. Stena Sealink* [1994] OJ L15/8, para. 66 and Commission Decision 94/119/EC *Stena v. DSB* [1994] OJ L 55/52, at para. 12.

20 F.O.W. Vogelaar, “The Compulsory Licence of Intellectual Property Rights under the EC Competition Rules: an analysis of the exception to the general rule of ownership immunity from competition rules” (2009) 6(1) *The Competition Law Review* 117, at pp. 121-122.

21 Commission Decision COMP/C-3/37.792 *Microsoft* [2004] OJ L32/23, at para. 3.

European competition law history.²² The Commission found that the refusal by Microsoft to supply the interoperability information amounted to an abuse of a dominant position in the market for operating systems for client PCs.²³ In that market, Microsoft held very high market shares and significant barriers to entry were present. According to the Commission, Microsoft's market share increased from 76.4% in 1996 to over 90% since 2000.²⁴ As a result of this, Microsoft held a near monopoly on the market with the Windows system being the de facto standard operating system product for client PCs.²⁵

Microsoft appealed the Commission decision which led to a judgment of the CFI on the application of the essential facilities doctrine to intellectual property licensing. The Court upheld the decision and followed the Commission's statements on the application of the four conditions established in *Magill* and *IMS Health* to the case.

B. Indispensability

With regard to the requirement of indispensability, the CFI repeated the conclusion of the ECJ in *IMS Health* that it is decisive that two different stages of production can be identified and that these stages are interconnected in the sense that the upstream product is indispensable for the supply of the downstream product.²⁶ Microsoft argued that the interoperability information was not indispensable to compete in the market of work group server operating systems. It asserted that there were five alternative methods by which interoperability with non-Microsoft operating systems could be achieved. Although perfect substitutability could not be obtained by these methods, Microsoft found that they were sufficient to ensure a minimum level of interoperability required for effective competition.²⁷ However, the Court followed the conclusion of the Commission that in order to be able to compete viably, competitors should be able to interoperate with the Windows domain architecture on an equal footing with the Microsoft systems. According to the Court, this did not imply that competitors could develop server operating systems which are identical to the Windows systems.²⁸ The interface information which Microsoft was required to disclose does not relate to its source code and to implementation details.²⁹ Besides, competitors would have no interest in developing exactly the same operating system, since this would not be sufficient to compete effectively with Microsoft.³⁰ Another important factor was that Microsoft had established a de facto standard for work group computing, because the Windows system represented the quasi-standard for client PC operating systems.³¹ The refusal to license therefore prevented Microsoft's competitors from using the industry standard. Since Microsoft's arguments did not prove that the assessment of the Commission was wrong, the Court concluded that the Commission was right to require the full provision of the interoperability information.³²

The CFI lowered the standard for indispensability in this judgment. In the *Bronner* case, the ECJ explicitly stated that it is not decisive whether the good or service to which access is demanded

22 BBC News, "Microsoft hit by record EU fine", 24 March 2004. Available at <<http://news.bbc.co.uk/2/hi/3563697.stm>> (last accessed on 27 June 2011).

23 See note 21 above, at para. 546.

24 See note 21 above, at para. 432.

25 See note 21 above, at paras. 448 and 472.

26 Case T-201/04 *Microsoft v. Commission* [2007] ECR II-3601, at para. 335.

27 *Ibid.*, at para. 345.

28 *Ibid.*, at paras. 374-375.

29 *Ibid.*, at para. 241.

30 *Ibid.*, at para. 242.

31 *Ibid.*, at para. 392.

32 *Ibid.*, at para. 421.

is the most advantageous possibility, as long as there are alternatives which are economically viable for competitors.³³ In the *Microsoft* judgment, the Court accepted the conclusion of the Commission that it is necessary for competitors to achieve the same operability with Microsoft's products as Microsoft itself. Microsoft argued that there were sufficient alternative methods available for competitors to achieve interoperability with the Windows system. Although it illustrated this with a practical example involving Linux, which has a constantly increasing market share on the work group server operating systems market without having access to the interface information, the Court agreed with the Commission that while a certain degree of interoperability is possible, this is not sufficient for competitors to viably remain in the market.³⁴ It can be concluded from the judgment that as long as the alternative solutions do not put competitors in an equal position to the dominant undertaking, the interface information is regarded as indispensable.

C. Exclusion of Effective Competition on a Secondary Market

Microsoft argued that the Commission only considered the "risk" of elimination of competition and not the "likelihood" of elimination of competition which the Court has always used in previous cases and which implies a stricter test.³⁵ The Court held that Microsoft's complaint was irrelevant since the expressions reflect the same idea. It stated that it is not necessary for the Commission to wait until all competition on the market is eliminated, because this would not be in line with the objective of Article 102 TFEU. It was sufficient to demonstrate that the refusal is liable to eliminate all effective competition on the market.³⁶ The Court argued that in this case the Commission was right to intervene before competition on the work group server operating systems market was eliminated, because of the significant network effects present in the market.³⁷

Since the indispensability requirement is closely connected with the requirement of elimination of competition, it was not surprising that the Court also held that the latter condition was met. However, the requirement seems to be applied less strict than in previous cases. In the *Magill* and *IMS Health* cases, the refusal to license had the effect of forcing competitors off the market. Without the TV program information, *Magill* could not provide its magazine for TV programs. NDC could not compete with *IMS Health* and its customers if it had no access to the data on regional sales of pharmaceutical products. In both cases, competition was actually eliminated due to the refusal.³⁸ In *Microsoft*, competitors would be able to stay in the market, since a minimum level of interoperability could be ensured without having access to the interface information. While the refusal to disclose the interoperability information would certainly impede competition, it would not result in an immediate elimination of all competition on the market. The Court recognised this by stating that a risk of elimination of competition was sufficient in this case. Therefore, it can be concluded that in *Magill* and *IMS Health* the criterion was applied more strictly.

D. Prevention of the Appearance of a New Product

Microsoft asserted that the Commission had not identified a new product which would be developed on the basis of the disclosed interoperability information and for which there would

³³ See note 11 above, at paras. 43-46.

³⁴ See note 26 above, at paras. 345-347.

³⁵ See note 26 above, at para. 439.

³⁶ See note 26 above, at paras. 561 and 563.

³⁷ See note 26 above, at para. 562.

³⁸ J. Killick, "*IMS* and *Microsoft* judged in the cold light of *IMS*" (2004) 1(2) *The Competition Law Review* 23, at p. 39.

be consumer demand.³⁹ However, the CFI argued that the appearance of a new product is not the only indicator which determines whether a refusal to license causes prejudice to consumers within the meaning of Article 102(b) TFEU. It stated that “such prejudice may arise where there is a limitation not only of production or markets, but also of technical development”.⁴⁰ The Court held that there was a limitation of technical development in this case, since the refusal to license the interoperability information discouraged Microsoft’s competitors from developing new work group server operating systems to the prejudice of consumers.⁴¹ Furthermore, because of the lack of interoperability, consumers were locked-in to Microsoft’s work group server operating system which resulted in a limitation on consumer choice.⁴² While a new product could not be pointed out explicitly, the Court considered that it was clear that the effect was similar to the prevention of a new product.

Although the ECJ made clear in previous cases that the requirement of a new product is essential,⁴³ the CFI recognised that other factors, such as a limitation on technical development, can also cause disadvantages for consumers as required under Article 102(b) TFEU. Thereby, it broadened the new product requirement by also including technical developments.⁴⁴

E. No Objective Justification

Microsoft invoked its intellectual property rights as an objective justification for the refusal to license its interoperability information.⁴⁵ The Court argued that the existence of intellectual property rights themselves could not constitute an objective justification, since otherwise a refusal to license could never be considered to form an abuse.⁴⁶ It still remains unclear what would constitute an objective justification.⁴⁷

The Court also rejected Microsoft’s argument that there would be a negative impact on its incentives to innovate if it were required to license the information, since it had not sufficiently established that the disclosure of the interface information would have a significant negative impact on its incentives to innovate. It merely put forward general arguments without specifying in which technologies or products its incentives to invest would be eliminated.⁴⁸ In addition, the Court argued that it is normal practice for operators in the industry to disclose interoperability information to third parties, since the disclosure may lead to follow-on innovation which can make the operator’s own products more attractive and therefore more valuable.⁴⁹ Since the arguments of Microsoft could not offset the exceptional circumstances identified in the case, the Commission held that there was no objective justification.⁵⁰

F. Application of the Essential Facilities Doctrine in the Microsoft Case

The judgment of the CFI in the *Microsoft* case has not clarified the requirements under which

³⁹ See note 26 above, at para. 621.

⁴⁰ See note 26 above, at para. 647.

⁴¹ See note 26 above, at para. 653.

⁴² See note 26 above, at paras. 650-652.

⁴³ See note 13 above, at para. 49.

⁴⁴ See note 17 above, at p. 121.

⁴⁵ See note 26 above, at para. 666.

⁴⁶ See note 26 above, at para. 690.

⁴⁷ See note 17 above, at p. 124.

⁴⁸ See note 26 above, at paras. 697-698.

⁴⁹ See note 26 above, at para. 702.

⁵⁰ See note 26 above, at para. 710.

a compulsory license may be granted. The Court did not provide any further guidance on what could constitute an objective justification for a refusal to license an intellectual property right, notwithstanding that this is the only possibility left for a dominant firm to prevent the imposition of a compulsory license when the other three conditions are already fulfilled. With regard to these conditions the Court mentioned the previous essential facility cases, but it departed significantly from the standards laid down in those judgments. The requirements of indispensability, elimination of competition and the prevention of the appearance of a new product have been interpreted much more widely than before.

This could be explained by the fact that *Microsoft* is the first case in the European Union which deals with intellectual property licensing in the IT sector. In the judgment, the CFI referred to the special features of the 'new economy' several times. With regard to the condition of indispensability, the Court acknowledged the importance of the existence of standards in the IT market by holding that Microsoft had established the de facto standard for work group computing which enabled it to prevent competitors from using the industry standard through the refusal to license.⁵¹ With respect to the second condition of the essential facilities doctrine, the Court argued that it was justified for the Commission to intervene before all competition on the work group server operating systems market was eliminated, because of the significant network effects present in the market.⁵² Thirdly, the Court referred to the concept of consumer lock-in within the framework of the new product requirement and argued that the lack of interoperability resulted in a limitation on consumer choice because of the lock-in effect.⁵³ Lastly, the Court referred to the industry practice of disclosing interoperability information to competitors which allows follow-on innovation to take place from which Microsoft itself could profit, since this could make its own products more valuable.⁵⁴ Hereby, the Court used the concept of indirect network effects.

While the CFI referred to the earlier intellectual property licensing cases in the judgment, the conditions used in *Microsoft* may not merely be variations on the criteria already defined in *Magill* and *IMS Health*, in the sense that the Court just further developed the essential facilities doctrine.⁵⁵ The above-mentioned statements of the Court show that it was aware of the special nature of the case and the effect that network effects and lock-in may have on competition in the IT market. By lowering the standards for the fulfilment of the conditions the Court may therefore not merely have intended to advance the essential facilities doctrine, but to adapt the already established conditions to a whole new sector in the economy. Since the market situation in the *Microsoft* case gave rise to substantial entry barriers, a compulsory license was needed to open up the market even though the 'strict' conditions of *Magill* and *IMS Health* were not met. By making the criteria more lenient, the Court was still able to remedy the adverse consequences of Microsoft's refusal to license. The adjustment of the conditions was therefore necessary in order to protect competition and innovation in the IT market. However, for other sectors of the economy the conditions may be too lenient in the sense that innovation may be negatively affected when compulsory licenses are imposed on a more general basis. For this reason, the stricter criteria established in *Magill* and *IMS Health* may still be valid for industries not characterised by IT features.

In the following two sections, attention will be paid to the economics of IT and to the innovation process in this industry to show that the IT sector is different from other sectors of the economy and therefore deserves a special approach.

51 See note 26 above, at para. 392.

52 See note 26 above, at para. 562.

53 See note 26 above, at paras. 650-652.

54 See note 26 above, at para. 702.

55 See note 20 above, at p. 133.

IV. THE ECONOMICS OF IT

Due to the special characteristics of the information technology industry, effective competition in the IT market may be harder to achieve than in other markets. As a result of network effects and switching costs, consumers are more easily locked into the existing technology of the dominant firm. Competitors have to overcome very high entry barriers in order to effectively compete with the dominant undertaking. When the existing technology is a standard in the market, the dominant firm may even become a monopolist.

In this section, the most important features of the IT industry will be discussed with reference to the effect these features may have on competition in the market. In addition, the impact of some of these features in the *Microsoft* case will be considered. It will be argued that IT characteristics may give rise to substantial entry barriers for competitors of the dominant firm.

A. Network Effects

A network effect or externality arises if the value of a product or service increases with the total number of consumers using it. The literature distinguishes between direct and indirect network effects.⁵⁶ A direct network effect exists when an increase in the number of consumers on the same network raises the consumption benefits for everyone using the network. An example of a good with direct network effects is the telephone network. The more people have access to it, the more valuable the network is for its users.⁵⁷ An indirect network effect arises when the value of the network increases with the number of products which are compatible with the network. An increase in the number of consumers using the network results in a higher demand for products compatible with the network. An example of this is the hardware/software system. In such a system, the value of the hardware good increases when there is more compatible software available.⁵⁸

In the *Microsoft* case, network effects were also present. The value of the Microsoft client PC operating system increased because a lot of people were using it. Therefore, the demand for programs compatible with the Microsoft operating system increased.⁵⁹ As a result of this, competitors had to make sure that their programs were able to interoperate with the Microsoft operating system in order to compete with Microsoft in secondary markets. Since Microsoft refused to disclose the information necessary for competitors to make their programs compatible with the Microsoft operating system, competitors were unable to compete effectively with Microsoft in the market for work group server operating systems. In the *Microsoft* case, even a “winner-take-all” situation occurred because of the significant network effects. The Windows operating system became a standard in the market which almost resulted in a monopoly for Microsoft which was holding a market share above 90%.⁶⁰

B. Switching Costs and Lock-in

Switching costs arise if a buyer finds it costly to switch from one seller or service provider to another. These costs are created as soon as the consumer makes an investment specific to his current

56 J. Farrell & P. Klemperer, “Coordination and lock-in: competition with switching costs and network effects” in M. Armstrong & R.H. Porter (eds.), *Handbook of Industrial Organization*, vol. 3 (Amsterdam 2007), at pp. 2009-2010.

57 O. Shy, *The economics of network industries* (Cambridge 2001), at p. 3.

58 N. Gandal, “Network goods (empirical studies)” in S.N. Durlauf & L.E. Blume, *The new Palgrave dictionary of economics*, vol. 5 (Basingstoke 2008), at p. 913.

59 See note 21 above, at paras. 449-451.

60 See note 21 above, at paras. 431 and 472.

seller or service provider that must be duplicated for any new seller or service provider.⁶¹ Due to switching costs, consumers can become locked into a given technology. This means that the costs of changing to another technology are so high that consumers will just stay with their current seller or supplier. The degree of lock-in is determined by the switching costs. If the switching costs are high, it will be very difficult for other sellers to attract new customers because of the high degree of consumers' lock-in to the dominant supplier.⁶²

It is possible to distinguish between different types of switching costs. Contracts can form switching costs. Consumers are sometimes locked into contracts for service and buying spare parts. The switching costs amount to the damages and compensation which have to be paid when the consumer wants to terminate the contract. Training and learning costs can also constitute switching costs. When a new system is adopted, consumers have to be trained to use the new standard. Next to these costs, lost productivity resulting from the adoption of a new system also forms part of the switching costs. A third category is data conversion. Users of information encoded in a specific format may refuse to switch to another system when this requires new software to work with the data. Another type of switching cost is search costs which includes the time and effort involved in finding a new supplier and the risk associated with choosing an unknown seller. Lastly, loyalty costs can be distinguished. These costs consist of losing benefits such as discounts and preferred customers' programs.⁶³

In the IT industry switching costs and lock-in are present, because information is stored and communicated using a specific system consisting of different pieces of hardware and software. Data conversion is therefore the most important type of switching costs in the IT market. In addition, learning costs can form switching costs, since specialised training is required to use particular systems.⁶⁴ As a result of this, it may be very hard for other market participants to gain market share when consumers have already invested in the system of the dominant firm.

C. Standards

In the information technology market, consumers are buying systems rather than individual products. Consumers are shopping for goods which can interoperate with the products they already have. Such goods are called complements. These goods have to be consumed together with other products, for example hardware and software. In order to produce complementary products, goods have to be compatible. This means that they have to operate on the same standard. Therefore, coordination is needed between firms to agree on the standard used.⁶⁵ This involves a strategy. In some cases, a company needs allies to successfully launch a new technology, but at the same time it wants to keep control on the development of the technology.⁶⁶ A firm can also decide to fight an existing standard by developing another technology. However, certain risks are involved since such a struggle can result in a "standards war" which may eventually be lost by one of the standards.⁶⁷ Strategies are therefore very important for competing in the IT industry.

In the *Microsoft* case, Microsoft decided to stop supplying competitors with interoperability information. According to the Commission, this decision was part of a strategy to remove competition from the market. When Microsoft just entered the market for work group server operating

61 See note 56 above, at p. 1978.

62 C. Shapiro & H.R. Varian, *Information Rules. A Strategic Guide to the Network Economy* (Boston 1999) at p. 104.

63 See note 57 above, at pp. 4-5.

64 See note 62 above, at p. 116.

65 See note 57 above, at p. 2.

66 See note 62 above, at pp. 227-228.

67 See note 62 above, at p. 261.

systems, it supplied its competitors with interoperability information. At that time, it needed the help of its competitors to gain a foothold on the market. As soon as Microsoft's own server operating system was accepted by consumers, it stopped to supply the interface information in order to uphold its established position on the market.⁶⁸ As a result, competitors could no longer make their products compatible with Microsoft's client PC operating system. Since Microsoft's system was the de facto standard on the market, competition was seriously impeded.

D. Natural Monopolies

The most important characteristic of natural monopolies is that these industries are subjected to strong economies of scale. Economies of scale are said to be achieved when more units of a good can be produced on a larger scale with on average less input costs. Thus, the efficiency of production increases as the number of goods being produced increases. Economies of scale are inherent in the IT industry. Information itself is costly to produce, but cheap to reproduce. The costs of producing the first copy of an information good are significant, while the costs of producing additional copies are negligible. In economic terms, the production of software or hardware involves high fixed costs, but low marginal costs.⁶⁹

Since significant economies of scale are present in information technology industries, these industries may be seen as natural monopolies. A natural monopoly occurs when, due to economies of scale, the maximum efficiency of production is reached if there is just a single supplier instead of several competing suppliers. It is very expensive to build networks, such as water pipelines or telephone lines. Therefore, it would be a social waste to have each water supply company or telephone company building its own network.⁷⁰ The same is valid for companies involved in information technology. For example, it would be wasteful to have each company develop its own operating system software. Therefore, many companies are relying on the natural monopolist's network to compete in secondary markets instead of competing with the monopolist's network directly. A prerequisite for this is that these competitors have access to the interoperability information in order to make their products compatible with the network of the natural monopolist. Due to the natural monopoly characteristics, there are high barriers of entry in the IT market. Because of the high costs of building a network, competitors will not be inclined to make the investment needed to enter the monopolist's market and compete with the network of the monopolist directly. Competitors will rather try to compete in downstream markets. However, if the dominant firm does not want to disclose the interoperability information, competition in the secondary market may also be eliminated, since competitors will not be able to make their products compatible with the dominant firm's operating system.

E. Consequences on Competition in the IT Market

Due to network effects, switching costs and economies of scale, very high barriers to entry exist in the IT market. Consumers are easily locked in to the technology of the dominant undertaking. Because of the significant economies of scale in the information technology industry, firms which have their own network, like Microsoft which has its own operating system, are natural monopolists. Since a huge investment is needed to build another network, it is very difficult for competitors to enter the market of the natural monopolist. As a result, effective competition in the primary market is very hard to achieve, also considering the network effects and switching costs present in

⁶⁸ See note 21 above, at paras. 587-588.

⁶⁹ See note 62 above, at p. 3.

⁷⁰ See note 57 above, at p. 7.

the IT industry. Users are very unlikely to buy an operating system without a wide range of applications already available, tested and used by other people. Therefore, competitors will rather try to compete with the natural monopolist in derivative markets, such as how Sun tried to compete with Microsoft in the market for work group server operating systems.

However, in order to be able to compete with the natural monopolist in secondary markets, competitors need the interface information which makes it possible for them to develop products which are compatible with the network of the dominant firm. When the natural monopolist does not grant access to the interoperability information, such as Microsoft refused to disclose the interface information to its competitors, competition is also impeded on the secondary market. The dominant firm is then able to leverage its monopoly power in the upstream market into the downstream market. In that case, just as in *Microsoft*, a compulsory license is the only way to restore competition in the market.

V. INNOVATION IN THE IT SECTOR

A compulsory license may negatively affect the innovation incentives of the dominant firm, since it compels the right holder to share his exclusive right with competitors which could reduce his profits on the invention. However, several empirical studies show that intellectual property rights are not the most important appropriation mechanism in the IT sector. Other ways of profiting from innovations exist which are more often used by firms. Next to lead time and secrecy, first-mover advantages and absorptive capacity are important innovation incentives beyond intellectual property rights.

In the following section, it will be argued that a compulsory license does not necessarily have a negative effect on innovation, since there are enough other appropriation mechanisms available. In addition, it will be shown that in dynamic markets, such as the IT sector, strong intellectual property protection might even reduce innovation, while competition and imitation become a spur to innovation.

A. First-mover Advantages

By being the first to enter a new market, the innovator may be able to gain some advantages over its competitors. These advantages arise from three sources. First, because of technological leadership, the first-mover has a cost advantage over its competitors, if it can keep learning proprietary and if it can maintain its market share. As a result of learning or experience curve effects, the production costs per unit fall with cumulative output. For this reason, the first-mover firm can produce the same products much cheaper.⁷¹ Second, by being the first to the market the firm may be able to gain an advantage by pre-empting competitors in the acquisition of scarce assets. If the undertaking has superior information, it may be able to obtain assets at prices below those that will dominate the market in a later stage. Such assets may include resource deposits and prime retailing or manufacturing locations. The returns for the first-mover firm consist of economic rents. The firm can also collect rents earned on mobile assets, such as employees, suppliers and distributors, if, as a result of the existence of switching costs, the mobility of these assets is restricted.⁷² Thirdly, first-mover advantages may arise from switching costs at the buyer's side. Because of these costs, competitors entering the market later must invest extra resources in order to attract consumers away from the first-mover firm. Due to the imperfect information of buyers with regard to prod-

71 M.B. Lieberman & D.B. Montgomery, "First-mover advantages" (1988) 9 *Strategic Management Journal* 41, at pp. 41-42.

72 *Ibid.*, at pp. 44-45.

uct quality, buyers stick with the first brand they come across that performs its function satisfactorily. For individual consumers, the benefits of finding a better-quality brand are seldom great enough to justify the extra search costs that have to be incurred.⁷³

In the IT industry, first-mover advantages are enhanced as a result of the strong network effects and economies of scale present in the market. Furthermore, the high switching costs in the IT market reinforce the existing entry barriers for competitors which enter the market after the first-mover firm has already bound the consumers to its products.

B. Absorptive Capacity

Related to first-mover advantages is the concept of absorptive capacity. The underlying principle of this concept is that a firm needs prior related knowledge in order to incorporate and use new technologies invented by others. A firm's absorptive capacity consists of the ability "to recognize the value of new information, assimilate it, and apply it to commercial ends".⁷⁴ This ability depends on prior investments in related knowledge, which includes basic skills and also knowledge of developments in scientific or technological fields. Investing in research and development (R&D) activities increases the firm's capability to use information from external knowledge sources.⁷⁵

The development of absorptive capacity is path-dependent. Once a firm has ceased to invest in R&D activities in a particular field, it cannot assimilate or exploit new information in that sector anymore. In that case, it is locked-out of later technological developments. If a firm does not develop its absorptive capacity in an initial period, it may not be aware of signals indicating that technological opportunities are present in the field. Even if the firm becomes aware of new advances of technology, it may refrain from investing since the lack of early investment makes it more costly to develop the required absorptive capacity to exploit new knowledge in a later period.⁷⁶

Since the innovator is the first to bring the new technology to the market, imitators have to duplicate at least a part of the R&D effort to overcome practical production problems.⁷⁷ However, if the other firms have developed absorptive capacity in the particular field, it may be easier for them to adapt to the new technology and exploit it themselves. The concept of absorptive capacity therefore shows that there is an incentive to innovate even without the existence of intellectual property rights. By merely buying the results of innovation in the form of licenses, competing firms will not be able to apply the new information if they have not invested in R&D themselves.

C. Empirical Research

Many studies have been conducted with regard to alternative mechanisms for appropriation. It follows from empirical research that intellectual property rights often only play a minor role in appropriation.

In a recent study, it was shown that among complementary sales or services, complementary manufacturing, secrecy and lead time, patents are the least important instrument to profit from R&D investments.⁷⁸ Other studies confirm that lead time and secrecy are the most important

⁷³ *Ibid.*, at p. 46.

⁷⁴ W. M. Cohen & D.A. Levinthal, "Absorptive Capacity: A New Perspective on Learning and Innovation" (1990) 35(1) *Administrative Science Quarterly* 128, at p. 128.

⁷⁵ *Ibid.*, at p. 129.

⁷⁶ *Ibid.*, at pp. 136-137.

⁷⁷ P. Lowe & L. Peeperkorn, "Intellectual Property: How Special is its Competition Case?" in C.D. Ehlermann & I. Atanasiu (eds.), *European Competition Law Annual 2005: The Interaction between Competition Law and Intellectual Property Law* (Oxford 2007), at p. 93.

⁷⁸ W.M. Cohen, R.R. Nelson & J.P. Walsh, "Protecting their Intellectual Assets: Appropriability Conditions and Why

mechanisms to profit from innovations.⁷⁹ Furthermore, research indicates that the most important reason for patenting an invention is not to protect the returns on innovation, for which patents are originally intended, but to block related products of competitors and to prevent copying.⁸⁰ When all firms engage in patenting for these purposes, in the end none of them will succeed in increasing their returns to innovation. The private return to patenting is high, but when all firms follow the same strategy, their actions offset each other. As a result, the value of patents diminishes.⁸¹ This may stifle innovation.

It is argued that in a static world imitation inhibits innovation, while in a dynamic world imitation may be beneficial to both the original innovator and to society as a whole. In a dynamic world, firms have many other incentives to innovate without patents. In that case, patents may even restrict complementary innovation, since they exclude others from copying and using the invention.⁸² The IT industry can be considered as a dynamic market. In this sector, each successive invention builds on the preceding one and different research lines are pursued to solve a problem. When innovation is both sequential and complementary, competition may increase firms' profits and patent protection may reduce overall innovation and social welfare. This would explain why industries like software and computers have been so innovative despite weak patent protection.⁸³

When patent protection was extended to software in the US in the 1980s, the number of patents for software increased enormously. According to the static model, the extension of protection would have led to an increase in R&D investments and an increase in productivity growth. However, R&D spending stagnated and even declined.⁸⁴ This is in line with the dynamic model according to which extension of patent protection inhibits complementary innovation. In the IT sector, imitation may become a spur to innovation, while strong patents become an impediment.⁸⁵

D. *The Pro-innovative Effects of Licensing*

Licensing of intellectual property rights is not harmful to innovation per se. While the right-holder has to grant access to competitors, this does not mean that he will not be able to recoup his R&D expenses. Although competitors may have a right to access to an intellectual property right, this does not imply a free of charge use of it. Competitors will have to pay royalties to the right-holder. These license royalties could even increase the intellectual property right owner's profit on a certain invention. Moreover, the burden of paying royalties could be a competitive advantage for the right holder in the form of a significant increase of rivals' costs.⁸⁶ This will lead to more innovation incentives for the right holder and also for his competitors who will try to develop follow-on inventions themselves. The competitive pressure could also motivate the owner of the intellectual property right to innovate more in order to prevent the success of a rival.⁸⁷

U.S Manufacturing Firms Patent (or Not)" (2000) NBER Working Paper No. 7552. Available at <<http://levine.sscnet.ucla.edu/archive/cohen-survey.pdf>> (last accessed on 27 June 2011).

79 A. Arundel, "The relative effectiveness of patents and secrecy for appropriation" (2001) 30(4) *Research Policy* 611.

80 See note 78 above, at p. 17.

81 A.B. Jaffe, "The U.S. patent system in transition: policy innovation and the innovation process" (2000) 29 *Research Policy* 531, at pp. 539-540.

82 J. Bessen & E. Maskin, "Sequential Innovation, Patents and Imitation" (2009) 40(4) *RAND Journal of Economics* 611, at p. 628.

83 *Ibid.*, at p. 612.

84 See note 77 above, at p. 95.

85 See note 82 above, at pp. 612-613.

86 G. Ghidini & E. Arezzo, "On the Intersection of IPRs and Competition Law With Regard to Information Technology Markets" in C.D. Ehlermann & I. Atanasiu (eds.), *European Competition Law Annual 2005: The Interaction between Competition Law and Intellectual Property Law* (Oxford 2007), at p. 113.

87 S. Scotchmer, *Innovation and Incentives* (Cambridge, Mass. 2004), at p. 296.

In addition, the right-holder can take advantage of derivative innovation developed by competitors as a result of the right to access. As discussed above, as a result of indirect network effects, the value of an operating system increases with the number of compatible programmes available. The right holder will therefore benefit from follow-on innovation by his competitors if he grants them access to his intellectual property rights. Furthermore, the intellectual property holder can gain advantage from cross-licensing.⁸⁸ The right holder benefits from innovation by his competitors, since they have to license their innovation back to the first innovator.⁸⁹ In addition, competitors share their patent rights with each other which facilitates diffusion of innovation and reduces duplication of R&D investments.⁹⁰ Licensing may therefore be considered as beneficial to right holders themselves and to society as a whole, since it spurs innovation and competition between the various market participants.

VI. TAILORING THE ESSENTIAL FACILITIES DOCTRINE TO IT

To find the balance between the need to keep incentives to innovate and the need to protect competition, the negative effects of a compulsory license have to be weighed against the possible positive effects. In the IT sector the positive effects of a compulsory license may outweigh its negative effects because of the special characteristics of this industry. Due to the substantial entry barriers in the IT sector, a compulsory license may be needed in order to protect innovation and competition. Because of the market situation grown around the intellectual property right, competition may be impeded on a whole market when the right holder is not willing to grant a license. In such situations, compulsory licenses should be imposed on the basis of more lenient conditions in order to restore competition in the market. A distinction should, therefore, be made between markets which are characterised by strong network effects and switching costs and markets not having these IT features.

A. Effects of Compulsory Licensing on Profits and Innovation Incentives

A compulsory license may have negative effects on economic welfare. In the short run, it can reduce welfare by compelling the right holder to license in situations where it is not beneficial for him to do so. In the long run, compulsory licensing can reduce incentives for innovation, since it may diminish the right holder's profits on the invention as competitors will be able to use the technology as well. However, as argued in the previous section, competitors will have to pay royalties to the right holder for the license. These license royalties could even increase the intellectual property right owner's profit on a certain invention. In addition, the right holder can gain advantage from cross-licensing, since follow-on innovators have to license their innovation back to the first innovator. As a result, a compulsory license will not necessarily reduce the right holder's profits on the invention.

With regard to the innovation incentives, attention must be paid to appropriation mechanisms other than the intellectual property system. Although the intellectual property system may be important for providing innovation incentives, there are sufficient other innovation incentives. Research discussed in the previous section indicates that firms find other mechanisms more effective to benefit from inventions. Next to lead time and secrecy, first-mover advantages and absorptive capacity are important innovation incentives beyond intellectual property rights. Furthermore, since the IT market is dynamic, the right holder will be able to benefit from follow-on innova-

88 See note 86 above, at p. 114.

89 Article 31(l) of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

90 See note 77 above, at p. 93.

tion of his competitors. The right holder can take advantage of derivative innovation developed by competitors as a result of the right to access. As a result of indirect network effects, the value of the right holder's network will increase with the number of compatible products available. The competitive pressure may also motivate the owner of the intellectual property right to innovate more in order to prevent the success of a rival. The effects of compulsory licensing on economic welfare depend on the specific characteristics and the dynamics of the particular sector. Because of the special circumstances in the IT market, the possible positive effects of a compulsory license may outweigh its negative effects.

B. The Market Situation as a Determining Factor

Although general criteria are established in European law under which a compulsory license can be imposed, a detailed inquiry is needed to analyse the effects of a refusal to license an intellectual property right in a particular case. The market situation grown around the intellectual property right may be seen as the most important factor in such an analysis. The market situation could indicate how strictly the conditions of the essential facilities doctrine have to be applied in a particular case. If effective competition is not possible anymore due to the existence of network effects and switching costs, the conditions for the applicability of the essential facilities doctrine should be applied much more lenient than in cases where these characteristics are not present. The market situation in *Microsoft* was extreme, since Microsoft held a quasi monopoly on a market characterised by IT features. Competition was therefore heavily impeded. In this situation, it should be justified to impose a compulsory license on the basis of less strict conditions.

The intervention on the basis of competition law in such cases is not conflicting with the objectives of intellectual property law. Competition law does not correct the exercise of the intellectual property right as such, but only corrects the market situation which has grown around the exclusive right.⁹¹ As Advocate General Jacobs stated in his Opinion in *Bronner*: "While generally the exercise of intellectual property rights will restrict competition for a limited period only, a dominant undertaking's monopoly over a product, service or facility may in certain cases lead to permanent exclusion of competition on a related market".⁹² In this situation, the risks to competition go far beyond the degree of restriction inherent in the protection offered by intellectual property law. Instead of a micro-monopoly on the solution found, the right holder is given a macro-monopoly on the sector to which the technological solution belongs. An intellectual property right is intended to offer protection to one solution only, not to a whole type of utility. The exclusive right is therefore not fulfilling the function for which it was granted when its exercise distorts competition on a whole sector of the market.⁹³

1. Markets having no IT characteristics

In a market which is not characterised by high network effects, switching costs and lock-in, competition is still possible through the normal process. The preference of consumers for a product which has become the most popular on the market does not prevent other competing products from entering or remaining on the market.⁹⁴ Intervention by a Court is less desirable when the market is still competitive and several alternatives are available for the system of the dominant

⁹¹ See note 86 above, at p. 115.

⁹² Opinion Advocate General in Case C-7/97 *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs* [1998] ECR I-7791, at para. 64.

⁹³ See note 86 above, at p. 114.

⁹⁴ See note 86 above, at p. 107.

firm. In that case, competitors are not dependent on the willingness of the right holder in order to be able to compete on the market. Competitors may develop their own system, since the market can still support more than one network. If they want to compete on secondary markets, competitors have several systems to make their products compatible with. When the market situation around the intellectual property right does not give rise to substantial entry barriers for competitors, the conditions under the essential facilities doctrine should therefore be applied strictly. An over lenient application of the doctrine could negatively affect innovation in these markets, since it may reduce the incentives of dominant firms to invest. In sectors where innovation is not complementary, cross-licensing and follow-on innovation is less common. A more general application of the essential facilities doctrine in these sectors will therefore not result in efficiency gains.⁹⁵ For this reason, the stricter criteria established in *Magill* and *IMS Health* should be used in these circumstances.

2. Markets with IT characteristics

In markets characterised by network effects and lock-in, intellectual property protection over the standardised technology vests the right holder with the power to control the degree of competition throughout the level of interoperability he is willing to grant to competitors. Due to the very high entry barriers in the primary market, competitors are only able to compete with the dominant firm in secondary markets. When the de facto standard in the market is protected by an intellectual property right, competitors are dependent on the dominant firm's willingness for being able to compete in those secondary markets. In order to compete in downstream markets, competitors will have to make their products compatible with the system of the dominant firm. For this, they need access to the interoperability information. When the dominant firm refuses to disclose this information on the ground that it is protected by intellectual property law, competitors will also not be able to compete in secondary markets. In such a situation, refusals to license intellectual property rights may reduce innovation, since competitors are not able to compete with the dominant firm. Therefore, the four conditions of the essential facilities doctrine should be applied more leniently in these cases.

This is exactly what the CFI did in the *Microsoft* judgment. Due to the special circumstances in the relevant market, the CFI lowered the standards for the imposition of a compulsory license in the *Microsoft* case. Therefore, it can be argued that the Court tailored the essential facilities doctrine to the specifics of the IT market. It did not lower the standards of the doctrine in general, but only for markets similar to that of Microsoft. A distinction should therefore be made between the essential facilities doctrine as applied in *Magill* and *IMS Health* and the essential facilities doctrine as used in *Microsoft*. The higher standards of *Magill* and *IMS Health* may still be valid for cases concerning markets with no substantial entry barriers. Since it is impossible to establish a single doctrine for the economy in general, the essential facilities doctrine should be adapted to each case and to each industrial sector. Because of the special circumstances in the IT sector, the doctrine should be applied more leniently in these markets in order to protect innovation and competition.

C. Alternatives to Compulsory Licensing

Although a compulsory license may be a good measure to remedy interoperability problems, it has some defects. One of the defects concerns the issue of legal certainty. Since the status of the essential facilities doctrine is not entirely clear and the four requirements have not been applied in a uniform manner, it is very hard for a dominant firm to know in advance whether a refusal

⁹⁵ See note 12 above, at p. 63.

to license will be considered as an abuse of its dominant position. The lack of legal certainty is particularly troublesome given the risk of a huge fine.⁹⁶ Another defect is the expensive and time-consuming litigation which precedes the imposition of a compulsory license. While an in-depth assessment is required to outline the consequences of the imposition of a compulsory license, in some cases direct action may be needed to block the adverse effects of a refusal to license on competition. In such cases, an alternative solution may be preferred. Although it will be very hard for a firm holding a dominant position on a market characterised by strong network effects, lock-in and switching costs to escape from compulsory licensing after the *Microsoft* case, a case-by-case analysis is still needed before a compulsory license can be imposed.

Reverse engineering may be considered as an alternative to compulsory licensing. However, it is a very costly and time-consuming activity. It requires considerable efforts with uncertain chances of success. In addition, the viability of products developed through reverse engineering depends on the dominant firm not breaking the compatibility. These were the reasons invoked by the European Commission in the *Microsoft* decision to hold that reverse engineering could not be seen as a viable alternative to a duty of disclosure by Microsoft.⁹⁷ Therefore, reverse engineering will in most cases not be an effective remedy for interoperability problems.

The establishment of open standards could be a better remedy for these problems. Especially in markets where the obstacles to competition are particularly strong due to network effects and lock-in, open standards may be a better solution for interoperability problems than compulsory licensing. In markets with open standards, switching costs are lower and as a result the degree of lock-in is also reduced. Consumers can benefit from the interoperability of products within a single network or from other networks and products that interconnect. The European Commission could play an important role in establishing open standards, since most dominant firms may not be willing to voluntarily change to an open system. According to its *Digital Agenda Communication*, the Commission will take action in this field in the coming years. The Commission is going to “examine the feasibility of measures that could lead significant market players to license interoperability information while at the same time promoting innovation and competition”.⁹⁸ It will be interesting to see what measures the Commission is going to take in this area. From the perspective of legal certainty, it would be better to make legislation applicable to the IT sector than to leave it up to the essential facilities doctrine which only focuses on the specifics of the individual case. Furthermore, because of the dynamic nature of the IT market, innovation will not necessarily be negatively affected when dominant firms are forced to license their intellectual property rights on a more general basis.

VII. CONCLUSION

The intellectual property licensing cases discussed in the beginning of this article show that the essential facilities doctrine has developed throughout the years. While the conditions of the doctrine themselves did not change, their application and interpretation by the Court did. In every case new aspects were added and previous rulings were never adopted entirely. This can be explained by the factual circumstances which require that the essential facilities doctrine is applied differently in every case. However, until the *Microsoft* judgment, the intellectual property licensing cases seem to be rather consistent in the elaboration of the doctrine. In *Magill* and *IMS Health* the Court did not break with its earlier judgments, but built on them and developed the essential

⁹⁶ See note 38 above, at p. 44.

⁹⁷ See note 21 above, at paras. 685-687.

⁹⁸ European Commission, “Communication from the Commission – A Digital Agenda for Europe”, at p. 15. Available at <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:PDF>> (last accessed on 27 June 2011).

facilities doctrine further.

This was different in the *Microsoft* judgment. The CFI referred to the earlier intellectual property licensing cases in the judgment, but it departed significantly from the standards applied in those cases. While the Court did not explain explicitly why it has done so, several statements of the Court show that it was aware of the special circumstances of the case. Therefore, it can be argued that the Court adapted the essential facilities doctrine to the specifics of the *Microsoft* case. Because of the exceptional market situation, this required a more lenient application of the conditions of the doctrine.

Looking at the economics of IT and the innovation process in this industry, it can be concluded that the IT sector deserves a different approach. Network effects and switching costs give rise to substantial entry barriers as a result of which competition is harder to achieve than in other markets. Compulsory licenses may help to open up the market and to foster innovation, since more competition may increase the incentives for innovation in the IT sector. As there are enough appropriation mechanisms beyond intellectual property rights, the dominant market participants will not be negatively affected in their ability to profit from inventions when they are forced to license their exclusive right to competitors on the basis of more lenient conditions.

It is impossible to construct a single doctrine that can be applied uniformly to all sectors of the economy. Since each sector has its own characteristics, the imposition of compulsory licenses will have different effects on competition and innovation in the market. Therefore, it is in line with economic reasoning to adapt the conditions of the essential facilities doctrine to the specific sector. This is exactly what the CFI did in the *Microsoft* case. By imposing a compulsory license on the basis of more lenient conditions, the Court tailored the doctrine to the IT sector. As a result, it can be argued that the Court did not lower the standards of the doctrine in general, but only for markets characterised by IT features. The higher standards used in *Magill* and *IMS Health* may for that reason still be valid for markets not having substantial entry barriers.

In future cases concerning intellectual property licensing, the market situation grown around the intellectual property right could therefore determine how strictly the conditions of the essential facilities should be applied. In order to protect innovation and competition in the IT market, a compulsory license should be imposed on the basis of more lenient conditions than in markets not characterised by strong network effects and switching costs.

Alternatives to compulsory licensing should also be considered. The efforts of the European Commission with regard to the establishment of more openness in the IT sector could be very influential, since a more structural remedy may be more effective to solve interoperability problems. Nevertheless, in the absence of more structural solutions, compulsory licensing could remain an exceptional remedy.